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Nicole D. Fields, Student

Angela Carman, DrPh, Committee Chair

Corrine Williams, ScD, MS, Director of Graduate Studies

SMART MOVES

BRIGHT BODIES

A Rural Adaptation to Combat Obesity among African-American
Teenagers in Wilcox and Lowndes Counties, Alabama

Nicole D. Fields

April 27, 2017

Committee Chair: Dr. Angela Carman, DrPH
Committee Member: Dr. Kathryn Cardarelli, PhD
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Abstract

Obesity is a significant problem in the United States; however, it is a burgeoning epidemic among youth in the United States. As of 2016, Alabama is the second-most obese state in the nation¹ and 16% of Alabama adolescents are obese². While obesity is a significant problem across all ethnic groups, minorities bear a disproportionate burden in Alabama: one in five African-American adolescents is obese². This disproportionate burden is demonstrated in two Alabama counties: Wilcox and Lowndes. Both counties are predominately African-American and rank in the bottom ten counties, statewide, for overall health outcomes^{9,14}. Nearly 50% of residents in both counties are obese^{9,14} compared to the national average of 36.5%¹. Several health indicators have been identified as possible contributors to the obesity epidemic in these counties: food insecurity, unemployment rates, poverty, poor dietary practices and physical inactivity. To mitigate the obesity prevalence among African-American teenagers in these counties, the Alabama Department of Public Health will implement the Smart Moves Bright Bodies program. Smart Moves Bright Bodies is a weight management program designed for obese and overweight adolescents. The program includes three components: physical activity, nutrition education, and behavior modification. The program is also designed to strengthen the family unit as parents and students are encouraged to identify healthier coping strategies and to prepare meals with healthier ingredients. Various partners such as the YMCA and local grocery stores will also help with reinforcement of sessions. The aim of the program is to help teenagers maintain a healthy weight while encouraging uptake of healthier lifestyle behaviors.

I. Target Population & Need

The Obesity Epidemic in Alabama

Over the past 20 years, obesity rates have dramatically increased, disproportionately affecting southern states; the top 10 most obese states are located in the South. Alabama is currently ranked as the 2nd most obese state in the country, with 33.5% of its population being obese¹. Adolescent obesity is also a significant problem in Alabama; as of 2015, 16.1% and 17.5% of adolescents were obese and overweight, respectively². However, the Alabama Youth Risk Behavioral Surveillance System (YRBSS) revealed that approximately 30% of adolescents described themselves as slightly or very overweight². Research has shown that childhood and adolescent obesity is a strong predictor of obesity in adulthood and earlier onset of various chronic diseases such as diabetes, cardiovascular diseases, and certain cancers^{3,4}.

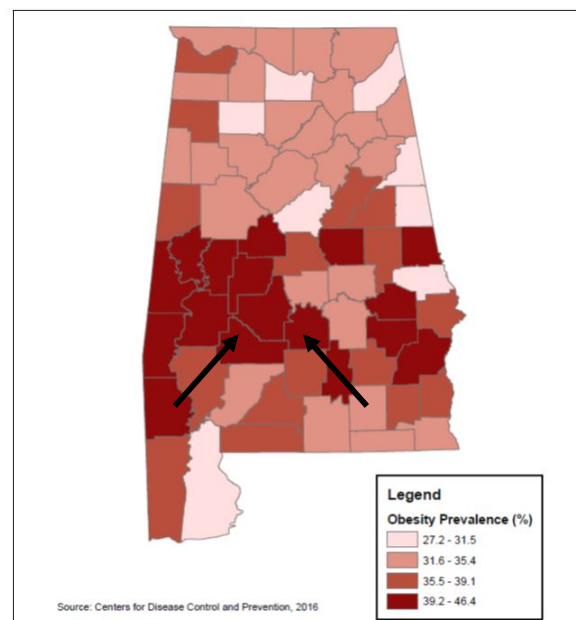
Risk Factors for Obesity

Poor diet, including a lack of fruit and vegetable consumption, is a risk factor of obesity and other severe health conditions. Data from the 2015 YRBSS suggest that 10.2% of Alabama adolescents did not consume fruit or drink 100% fruit juices seven days prior to the survey; 10.4% of adolescents did not consume vegetables². There is also evidence to suggest a causal relationship between increased sugar-sweetened beverage consumption and obesity among adolescents^{5,6}. 28.2% of Alabama adolescents drank a can, bottle, or glass of soda one or more times per day². Another unhealthy dietary behavior, skipping breakfast, has also been positively associated with obesity, increased BMI and adiposity, and decreased nutrient intake⁷. 69.5% of Alabama adolescents did not eat breakfast on each of the seven days prior to the administration of the YRBSS².

Lack of physical activity is also another well-known risk factor for obesity. 74.6% of Alabama adolescents reported that they were not physically active for at least 60 minutes on any of the seven days leading up to the BRFSS survey². Sedentary behaviors, such as prolonged television viewing, are significant predictors of obesity in early adulthood for adolescents⁸. On an average school day, 30.8% of adolescents watched three or more hours per day².

Obesity in Wilcox and Lowndes Counties

Figure 1. Age-Adjusted Obesity Prevalence in Alabama, by county, 2013



Wilcox County (L) & Lowndes County (R)

Wilcox County, which is 100% rural, is located in the Black Belt region of Alabama, known for its agriculture. Demographically, over 70% of its residents are African-American⁹. Unfortunately, the county has been marred by poverty and poor health. The county's largest employer shut down in 2009 due to lost revenue; it is not surprising then that unemployment in Wilcox County is four times the national average¹⁰. The economic state of the county is grim; the median household income is \$24,000 which is significantly less than the highest earning counties in the nation at \$61,700⁹. The unemployment rate in the county is 17.4%, nearly six times the

national average⁹. Although the county is reeling economically, the poverty disparity between African-Americans and Whites in Wilcox is startling. Less than 10% of White residents in Wilcox County live below the poverty line compared to 50% of African-American residents living below the poverty line¹¹.

Income is an effect modifier of the relationship between obesity and food insecurity. The United States Department of Agriculture (USDA) defines food insecurity as “reduced quality, variety, or desirability of diet with disrupted eating patterns and reduced food intake”¹². Food insecurity can also result from low-access to fresh produce, which for rural counties, is living more than 10 miles from a supermarket¹². Food insecurity has been shown to negatively affect health outcomes for children. Children in food-insecure households have a third greater odds of being hospitalized since birth and have almost twice the odds of reporting their health status as “fair or poor” compared to children in food-secure households¹³. The proportion of Wilcox County residents reporting food insecurity is nearly three times the state average. Nearly half of all children in the county are impoverished, a proportion nearly twice that of the state prevalence and four times that of the United States; 96% of children are eligible for free lunch⁹. The health implications of the abysmal economic state of the county are glaring. The county ranks last in the state for health outcomes with 44% of its residents listed as obese⁹.

Lowndes County is very similar to Wilcox County, demographically and health-wise. Lowndes County is also 100% rural and approximately 73% of Lowndes County residents are African-American¹⁴. Economically, the median income of residents is \$30,700 with 12.9% of residents being unemployed which contributes to the high food insecurity in the county¹⁴. Four percent of White residents are impoverished compared to 35% of African-American residents¹¹. Lowndes County residents experience food insecurity nearly three times the national average.

46% of children in the county are impoverished; no data is given for the percentage of children eligible for free lunch¹⁴. Health-wise, Lowndes ranks 64th out of 67 counties for overall health outcomes and 46% of residents are obese¹⁴.

Research suggests that early adolescence plays a critical role in predicting obesity among Black youth; one in four Black children are obese by the time they reach the eighth grade, nearly double compared to their White counterparts¹⁵. In Alabama, obesity and being overweight greatly affects African-American adolescents. One in five African-American adolescents are obese compared to 14% of White adolescents; one in five African-American adolescents are also overweight compared to 17% of White adolescents². Poor nutrition and lack of exercise also disproportionately affect black adolescents compared to white adolescents. Black students, on average, were more likely to eat at least one meal or snack from a fast food restaurant, eat dinner with the TV and without a parent/guardian, and least likely to exercise for more than 20 minutes compared to white students, Hispanic students, and female and male students¹⁶. Therefore, the greatest need for improving health outcomes lie within the African-American adolescent population in two Alabama counties, Wilcox and Lowndes counties.

Available Resources in Wilcox and Lowndes Counties

Different programs have been implemented in both counties to combat the obesity epidemic. The Wilcox and Lowndes Counties' Boards of Education have both established a Child Nutrition Program; breakfast, lunch, and after-school snacks are provided at no charge for students, regardless of eligibility^{17,18}. In conjunction with land-grant institutions, Alabama A&M University and Auburn University, extension agents are provided to each county. 4-H programs offer cooking classes for students to prepare healthier versions of their favorite meals; SNAP education and benefits are provided to residents¹⁹.

We, as the Alabama Department of Public Health (ADPH), expect to reach approximately 225 ninth-and tenth-grade students in Wilcox and Lowndes counties over the course of the three-year grant period. More details regarding recruitment and retention of students is provided in the “Recruitment and Retention” subsection of the Program Approach section.

ADPH will also provide brochures to students and their parents with links to hospitals, primary care providers, and mental health services that are close in proximity to our two counties. If a student, for example, is diagnosed with diabetes during the program, we will connect the student with the appropriate medical services. Since we are targeting obese and overweight teenagers that are at a greater risk for developing more severe chronic diseases, we want to make sure students receive the best care so that we prevent further illness. We also have safeguards in place in the event of adverse events occurring during the physical activity sessions. We estimate that 10% of our participants may suffer an adverse event; participants suffering from a medical emergency will be referred to J Paul Jones Hospital in Camden, Alabama. In the event that a student is suffering from severe anxiety and/or depression, he or she will be referred to the Cahaba Center for Mental Health Focus also located in Camden, Alabama. We anticipate no more than 20% of our participants suffering from mental illness throughout the program. More detailed information regarding healthcare service referrals is provided in the “Partnerships and Collaboration” section.

Identification of Community Needs

ADPH conducted an environmental scan to better assess the available resources in both counties targeting obesity prevention and weight management. Residents, in both counties, agreed that there are a plethora of obesity prevention programs targeting young children and

adults but there is a dearth of programming tailored to the adolescent population. From that initial town hall meeting and evidence regarding childhood obesity and its negative prolonged consequences, the Health Department decided to provide a weight management program specific to obese and overweight adolescents. We also created a Community Advisory Group (CAG) to serve as the voice of the community during planning and implementation of our program. Representatives on the CAG included students, parents, a school superintendent, the YMCA, and the Cooperative Extension Specialist from Tuskegee University's Cooperative Extension Program (TUCEP).

Student insight is beneficial to the success of the program; not only are they direct beneficiaries of programmatic efforts, they also can provide feedback for the implementation of the program which can inform evaluation activities. Dr. Lewis Gordon, superintendent of Wilcox County Public Schools, is responsible for managing day-to-day activities of schools, hiring staff, and overseeing fiscal responsibilities. His perspective will shed insight on the advantages and disadvantages relative to an after-school program. The YMCA has been a mainstay in communities nationwide promoting community health and physical activity. Their facilities are heavily utilized since our communities have limited access to fitness centers or gyms. Input from the YMCA may be valuable since they are providing summer vouchers which are additional incentives for program participants. Dr. Jenny Balewa, Ph.D., MPH, is the Cooperative Extension Health Specialist with TUCEP. She is the lead on several projects related to nutrition, fitness, and obesity such as a summer fitness academy and a program to promote obesity awareness and healthy living choices. She can offer insight as to how county extension offices can provide the best services for children in after-school programs. Although parents are also participants in the intervention, they are invaluable assets on the CAG. As part of the

Socioecological Framework, parent wield substantial influence over their children's nutrition due to the accessibility and amount of food present in the home²⁰. Early childhood is a critical period when children begin to adopt their food preferences; children will develop these preferences through observation of their parents²⁰. Parents also wield power over their children's physical activity; lack of parental modeling of healthy behaviors leads to a higher BMI among adolescents²¹.

II. Program Approach

Smart Moves/Bright Bodies

Smart Moves/Bright Bodies is a multi-faceted weight management program designed to promote healthy living through diet and exercise to reduce obesity prevalence²²⁻²⁴. This program was created for children and adolescents, aged 8-16, in an effort to combat the increasing overweight and obesity prevalence among this age group. It is delivered over the course of a calendar year (12 months) in four, 12-week phases, with two-week breaks strategically placed between each phase. At the beginning of the program, students consult with a physician to determine a reasonable goal weight to be met by the end of the program. After the first six months of the program, all students transition into the maintenance phase even if they do not meet their goal weight. The maintenance phase encourages peers to motivate each other to maintain a healthy weight. Students are only required to attend sessions twice a month, rather than twice a week.

The Smart Moves/Bright Bodies program originated from the Yale Pediatric Obesity Clinic in New Haven, CT. Randomized control trials were conducted with obese adolescent patients who wanted to participate in the program and had a willing parent or guardian to participate in the nutrition & behavioral modification sessions²³. Outside of a clinical setting, the

program can be implemented in an afterschool program, fitness center/gym, or a community center. The program is unique in that, unlike most obesity prevention programs that only focus on physical activity and/or diet, these components are combined with the cognitive behavioral training needed to assist parents and children in sustaining positive behavior change. Whereas most obesity prevention programs only focus on the individual, Smart Moves/Bright Bodies includes the entire family unit, encouraging parents to be active participants to promote positive behavior change in the household²²⁻²⁴.

The program provides intervention at the physical activity, dietary, and cognitive levels. Led by two exercise physiologists, students participate in 50-minute physical activity sessions twice a week. Each session begins with a warm up exercise, followed by a high aerobic intensity exercise, and concludes with a cool-down exercise. The high-intensity exercise is intended to sustain 65%-80% of the age-dependent maximum heart rate; suggested activities include obstacle courses, flag football, basketball, basic sports drills²²⁻²⁴. In relation to the structure of the program, students would participate in 100 minutes of physical activity per week during the first six months of the program and then participate in 100 minutes of physical activity per month during the maintenance phase. Students are also encouraged to exercise three times per week at home, outside of sessions.

The nutrition education component of the program exposes students and parents to a non-dieting approach to weight management and encourages them to consume low-fat and nutrient-rich foods. Classes are held once a week for 40 minutes and facilitated by a registered dietitian. Session topics include portion control, reading and interpreting food labels, and the importance of a non-dieting approach for healthy eating. One class in particular, "Recipes Dear to Our Heart:

Ingredient Substitutions for Traditional Recipes”, allows students to recreate traditional family recipes using healthier ingredients.

The third component of the program, behavior modification, is critical to tie both the exercise and nutrition components together. Behavioral modification allows participants to maintain healthy, long-term dietary and physical activity practices²⁵, lending to sustainability after the program’s conclusion. Classes are facilitated by either a psychologist or social worker licensed in cognitive behavioral therapy. Similar to the nutrition classes, behavior modification classes are offered once a week for 40 minutes. The social worker or psychologist will work with students on improving self-awareness, coping strategies, and goal-setting among other things²²⁻²⁴. Separate class offerings are offered to parents and caregivers to discuss their role as “health gatekeepers” in their household, including potential challenges and proper coping strategies to handle such challenges.

Afterschool Implementation of Smart Moves/Bright Bodies Program

The Smart Moves/Bright Bodies program will be implemented in two rural counties in Alabama compared to the urban setting of New Haven, Connecticut. The program will also be launched in an afterschool setting instead of a clinical setting. Several studies have documented a decrease in BMI for overweight and obese students participating in afterschool programs that emphasize moderate-to-vigorous physical activity²⁶. At the beginning of the program, a physician from J Paul Jones Hospital will provide consultations with students to discuss a target weight to be met by the program’s conclusion in April.

Hosting the Smart Moves/Bright Bodies program in an afterschool setting eliminates three significant barriers: accessibility, availability, and affordability. Accessibility is a significant barrier to participating in afterschool programming. 64% of African-American

parents indicated that transportation was a major factor in deciding to enroll their children in an afterschool program²⁷. There is also a lack of afterschool programs serving rural African-American youth. Additional interviews revealed that if afterschool programs were made available, nearly half of African-American parents would have their children enrolled²⁷. The program is also provided free of charge to participants and all program materials will be purchased by ADPH. The afterschool option may also calm parental fears of their children being unsupervised. Over 60% of children in both counties reside in single-parent households; these single parents tend to work longer and/or later hours to provide for their families. Children left unsupervised for lengthy periods of time per week are more likely to engage in deviant behaviors and harbor feelings of resentment toward their parents²⁸. Over 65% of rural parents strongly agreed that there are overwhelming benefits for their children participating in an afterschool program, such as building their social and career development skills and refraining from engaging in risky behaviors²⁷.

The program will also be implemented over the course of the academic year instead of the calendar year; the intervention phase will coincide with the fall semester and the maintenance phase will coincide with the spring semester. It is not feasible to implement the program over the calendar year as we will not have access to students during summer break. We are also utilizing PE teachers, family resource counselors, and a county extension agent to lead the physical activity, behavior modification, and nutrition education sections, respectively. Additional cognitive behavioral therapy training will be provided to our family resource counselors as this training is required by the original program. All staff were chosen based on their familiarity with students and their extensive work in both communities. School administrators have granted us permission to use kitchen facilities for cooking demonstrations during the nutrition education

sessions. Since parents would most likely be unable to join their children for the nutrition sessions due to work commitments, sessions will be recorded and posted on YouTube. YouTube videos will be made private by our project coordinators and only shared with participants in that particular cohort to avoid contamination with other students.

Sessions will be held with the same frequency and duration as established with the original program; we have provided a mock schedule (**Appendix E**) to highlight the weekly schedule during the intervention and maintenance phases of the program. We will also incorporate two specific partners, the YMCA and grocery stores, to help reinforce session topics. The YMCA will provide summer vouchers to participants so that they maintain an active lifestyle over the summer months. We are also partnering with local grocery stores to provide designated store sections for participants to purchase healthy, affordable items.

Recruitment & Retention

The National Center for Education Statistics, provides a search engine via Common Core of Data (CCD), regarding the enrollment of students in public schools across the United States²⁹. There are three public high schools located in Wilcox County (Wilcox Central High School) and Lowndes County (Central High School; Calhoun High School). Enrollment during the 2013-2014 school year at Wilcox Central High School totaled 534 students; enrollment totaled 247 and 258 students at Central and Calhoun High Schools respectively. The Health Department will contact principals at all three high schools and both the Wilcox and Lowndes counties' school superintendents to discuss the program and its intended health outcomes and benefits. Seventy-five students per year will be selected to participate in the program in three high schools located in our target counties. Since the original implementation of the program was designed to reach

60-80 students, we will reach 75 students per year for a total of 225 students over the three-year grant period.

Recruitment for the program would begin in the spring semester prior to implementation. Using health data collected by the schools, administrators would send a letter to the parents of ninth- and tenth-grade students with a $BMI \geq 25$. All three high schools are required to keep student health records for all students; these records would contain information regarding physical examinations, vaccinations, and the health history. Since the program targets students aged 8-16, we sought to recruit high school students within this age range (i.e. ninth- and tenth-grade students). Participants will be randomly selected from those that have completed the demographic questionnaire and a consent form. Official correspondence concerning the program will come from school principals, not the Health Department, as a relationship has already been established between the school and the parents. If questions or concerns arise, the project coordinators will maintain contact with parents and students throughout the summer. Upon enrollment in the program, students will receive a \$15 gift card. Staff employed by the Wilcox and Lowndes County public school systems will receive a stipend in addition to their salaries for their contributions to the program.

While recruitment is important, retention is equally as vital. The end of the fall semester will be used as a progress report to gauge if the student is on track to meet his or her goal weight at the conclusion of the school year. We will be utilizing a point system that allows students to accrue points based on the amount of sessions they attend and the amount of weight lost during the program. A dinner and recognition ceremony will be held at the conclusion of the school year for each cohort to recognize students and their families for participating in the program.

However, a MacBook Pro and a one-year YMCA Family Membership will be awarded to the student that lost the most weight and the family that attended the most sessions.

Potential Impact

Dire economic straits have exacerbated health disparities among black and white residents, highlighting an intense need of intervention in these counties. Through its multifaceted approach to weight management, our program can impact an often-neglected subpopulation: African-American teenagers. Our program is a family-based intervention which we believe will help to facilitate positive interaction between parents and their children regarding proper nutrition and wellness. The sessions build self-efficacy for students to engage in health protective behaviors and know that they are in charge of their own health. Involving parents in the program encourages families to work together to achieve optimal health.

Overall, our long-term health outcome goal is to see a 1% decrease in obesity among program participants in both Wilcox and Lowndes counties. Since we are serving a very small number of residents, we would not expect to see a large decrease in obesity prevalence among our population. Process goals include increased physical activity, improved nutrition, and better coping strategies. Over the course of the academic year, we expect to see decreases in BMI, body fat percentage, blood pressure, and cholesterol. Previous studies have also reported a reduction in insulin resistance, which is measured by the homeostatic model assessment (HOMA-IR). Obese and overweight children have a higher insulin resistance which causes the pancreas to increase insulin production; over time, children with a higher insulin resistance are at greater risk of developing Type 2 diabetes, hypercholesterolemia, and hypertension³⁰.

Evaluation

The Alabama State Health Department will meet monthly with the program coordinators to ensure that the program is being implemented as intended by the Yale Bright Bodies staff. We will also meet with both counties' school boards at the end of each academic year to discuss benefits of the program (e.g. increased physical activity, lower BMI, reduction in insulin resistance). Data collection will be led by the program coordinators with the assistance of a graduate student from Tuskegee University, a historically black college/university. Measurements for weight, cholesterol, body fat, BMI, triglyceride levels, and insulin resistance will be collected at baseline (beginning of the school year), midpoint (end of the fall semester), and the endpoint (end of the spring semester). The graduate assistant is also responsible for attendance tracking to ensure students are regularly attending each session. This is to account for possible attrition bias; if a student and parent decide to withdraw from the program, our graduate assistant will follow up with the participants to learn of their reasons for withdrawing.

Dissemination of our findings will occur via press releases through the Alabama State Department of Health and the Alabama Obesity Task Force. We plan to submit abstracts for poster presentations at childhood obesity conferences and subsequently, publish our findings in the *Journal of Childhood Obesity*. School administrators will disseminate findings at the school board meetings and through letters to be sent home with students. All data collected and student feedback will be forwarded to the CAG to be disseminated to the target communities.

Limitations

The Smart Moves/Bright Bodies program is designed to reduce obesity among overweight and obese adolescents. Since we are only focused on obese and overweight teenagers, our program may be seen as ostracizing students by “fat-shaming” them or punishing them for their weight. However, our program gives participants a sense of belonging as most of

their peers belong to a sports team or are involved in extra-curricular activities. Students can self-select into the program; if they may feel uncomfortable in participating, they are not required to do so.

Additionally, long-term behavioral change is a concern. The program ends after only one academic year and then a new cohort will be recruited each fall during the three-year grant period; this is done to maintain fidelity with the original Yale program. Also, in maintain fidelity with the original Yale program, we are only assessing biometric measures as our primary outcome is weight loss. This may not be sustainable long-term as we are not impacting the built environment nor are we addressing food insecurity or socioeconomic status. Although we are providing sessions to increase physical activity and improve nutrition, the reality of food insecurity and poverty remains overbearing. These counties have an over-abundance of fast-food restaurants and lack of access to fresh produce which contribute to the high obesity prevalence. The cost and availability of fresh produce may be a significant deterrent to eating healthy for many families.

However, the “train the trainer” model is designed to help students teach their parents how to create their favorite meals with low-fat and budget-friendly ingredients. YouTube videos will reinforce nutrition sessions and can be accessed at any time after the program’s conclusion. Grocery stores’ offerings of healthier and affordable food options for participants may help to attenuate the relationship between poverty and obesity prevalence. Additional reinforcement will be provided through each school’s wellness course, which is offered during a student’s eleventh-grade year. Since only ninth- and tenth-grade students are eligible to participate, the wellness course will serve as a refresher for participants.

Another potential limitation is long-term financial sustainability. School budgets are constantly changing and any program can have its funding suspended at any moment. The original Yale program recommends that staffing for the program includes a registered dietitian, exercise physiologists, and a social worker or psychologist. However, Wilcox and Lowndes counties are resource-poor; therefore, we will utilize existing teachers in both county school systems. All staff will be trained by Yale Bright Bodies staff to ensure the program is implemented as intended and the guidance counselor will receive additional training for cognitive behavior therapy. In addition to reducing costs, the use of school staff reinforces familiarity with the students.

Biases, both selection and information, can negatively affect the internal validity of the program. There are inherent differences among students and parents that choose to participate (e.g. more motivated, may view weight loss as a positive outcome) versus those who choose not to participate. Attrition bias is bound to occur due to the length of the program and fatigue may cause some participants to discontinue the program. Certain retention measures (e.g. MacBook Air, YMCA family pass) have been enacted to reduce attrition among participants. BMI progress may be lost over the summer months due to lack of reinforcement of program sessions. We have also partnered with the YMCA to provide free summer vouchers for participants and their families so that cost will not be a barrier to maintaining physical activity.

III. Performance Measures & Evaluation

Formative Evaluation

Prior to implementation, the CAG will conduct a needs assessment in both counties to gauge the community's receptiveness to an afterschool weight management program. The CAG will also review all curriculum materials to ensure that recipes, exercises, and behavioral

modification activities are culturally appropriate for our target population. Once the needs assessment has been conducted and program materials have been reviewed for cultural competence, ADPH will move forward with the implementation of the program.

The Smart Moves/Bright Bodies program will be implemented in Wilcox and Lowndes Counties, Alabama using non-equivalent groups design. During the spring semester prior to implementation, identified eligible students and their parents will receive information regarding the program, a consent form, and a demographic questionnaire. More information regarding the instruments and scales used, including their reliability and validity, is located in **Table 1**. We are only able to enroll 75 participants across the three high schools per year; these participants will serve as our intervention group and receive the Smart Moves/Bright Bodies program. Participants will be randomly selected and of course, not every applicant will be selected as a participant in the program. Of those eligible students that were not selected, 75 will be selected to serve as controls for the program. Controls will be informed that although not selected in the first cohort, they will be first in consideration for the next cohort of the program.

Process Evaluation

Demographic data will be obtained for students in the intervention group through the demographic questionnaire and for students in the control group via student health records. The purpose of collecting this data is two-fold: the data collected indicates the numbers served by gender and race/ethnicity and also provides information as to differences between students who choose to enroll in the program and those who refrain from participating.

We will be utilizing a mixed-methods approach in gathering data from participants. Quantitative measures involve obtaining clinical measures at baseline and qualitative measures will include interviews with ten parents, per cohort, regarding the home food environment (i.e.

occurrence of family dinners, amount of television watched during dinner, food insecurity). The interviews provide evidence for a student's capability of practicing health protective behaviors (e.g. healthy eating, vigorous physical activity) and whether parents are actively encouraging the practice of these behaviors.

Process evaluation activities will measure how many students and parents choose to participate, how many participants attend all sessions, and the attrition rate of participants. Project coordinators will arrange random session visits to ensure that staff are following the training received during the original training session. The project coordinators are also responsible for following up with students that have not attended multiple sessions. For the purposes of this program, attrition is defined as "failure to attend three consecutive weeks' worth of sessions". If a student meets the attrition criteria, project coordinators will contact parents to ascertain their reason(s) for discontinuing the program.

Outcome Evaluation

The goal of the Smart Moves/Bright Bodies program is to help overweight and obese African-American teenagers in Wilcox and Lowndes Counties, Alabama reach and maintain a healthy weight while indirectly reducing the prevalence of obesity. This broad goal can be broken down into more specific goals. First, the program aims to provide education and empowerment for students to engage in health-protective behaviors. Secondly, the program aims to involve parents to help them set a more positive and healthy example for their families. Lastly, the program involves the family unit by utilizing the "train the trainer" model so that students and parents are able to build the necessary skills to adopt a healthy lifestyle once the program ends. Outcomes will be evaluated through routine surveillance data. Weight, BMI, body fat, blood pressure, and insulin resistance (HOMA-IR) will be measured at baseline, the end of the

fall semester, and the end of the spring semester.

The program increases students' ability to engage in physical activity, learn how to prepare nutritious and inexpensive meals, and helps them improve their self-esteem while replacing negative behaviors with positive behaviors²²⁻²⁴. The program also reinforces a strong family unit through the nutrition education sessions where parents and students can learn how to prepare healthy and satisfying meals. Another program outcome is to strengthen parental coping skills by teaching parents to model healthy behaviors for their child²²⁻²⁴. In order to continue seeing results after the program's conclusion, the Community Action Group (CAG) will meet with various policy makers and local business owners to provide healthier food options and more exercise opportunities for families. Additionally, each student cohort will be asked to complete an anonymous survey discussing the pros and cons of the program and ways the program can be improved. These suggestions will be discussed during the summer planning period to address any problems before implementation in Year 2 and Year 3, respectively. If the program is successfully implemented in our intervention high schools, we will implement the program in elementary and middle schools in Wilcox and Lowndes counties and then in schools across the state.

Table 1: Data Sources (Questionnaires, Surveys, Scales, Personal Interviews)

Constructs	Definition of Variables [Data Variables]
Home Environment	From the sample of 75 students, 10 parents will be randomly selected to do an in-depth interview. The interview will discuss the home food environment and other social determinants of health (e.g. food insecurity, lack of access to fresh produce) that are prevent their family from engaging in the health protective behaviors [in-depth personal interviews].
Demographics (Moderator Variable)	As part of recruitment for the program, students and parents will receive a demographics questionnaire. Students will be asked to fill out the following portions: race/ethnicity*, age, gender. Parents will be asked to give information regarding income level and food insecurity.
Height & Weight	Height and weight measurements are taken in a private room using a calibrated weight scale and stadiometer. Waist circumference was measured by BMI, specific to age, which was calculated based on CDC guidelines.
Blood Pressure	Two blood pressure readings will be taken, using a blood pressure monitor and recorded by the school nurse.
Insulin Resistance	Determined with a blood sample and utilizes fasting glucose insulin and plasma levels. The HOMA-IR is calculated by adding together the fasting glucose plasma and the fasting glucose insulin levels ²³ .
Cholesterol & Triglyceride Levels	Ascertained with a blood sample (to be taken by the school nurse).
BMI	Will be taken from student health records and confirmed through the height and weight measurements

*Not all high-school students in Wilcox and Lowndes counties are African-American. Although our intervention is targeting African-American teenagers, white students will be included in the program; however, less than 10 students between the three schools are white.

IV. Project Management

Ensuring a successful implementation of the Smart Moves/Bright Bodies program requires the help of the brightest minds in Alabama. Ms. Sarah Middleton will serve as the principal investigator and is the Supervisor of Field Operations at ADPH. She will work closely with the project coordinators and graduate assistant to create the CAG, ensure data collection is done with integrity, and manage the budget. Ms. Middleton will also serve as the ADPH representative on the grant, being present at all CAG and town-hall meetings. Her relationships with the three principals at our target schools and the superintendents for Wilcox and Lowndes County Public Schools are critical for successful implementation and administrative buy-in.

There is no project director for this program as all staff will report to Ms. Middleton. However, we will have two project coordinators, Danielle Jackson and Marcus Allen; Ms. Jackson will work with Lowndes County and Mr. Allen will work with Wilcox County. Both project coordinators and the principal investigator have implemented countless programs in underserved communities and have the expertise to engage in community-based participatory research. Mr. Allen and Ms. Jackson are responsible for: (1) contacting all participating schools; (2) ordering the required supplies for the program; (3) hiring a graduate research assistant from Tuskegee University through TUCEP; (4) managing the budget and providing midpoint progress reports to Ms. Middleton; (5) organizing a community advisory group; (6) following up with participants that have dropped out of the program; and (7) assisting with all IRB-protocol activities. The project coordinators will facilitate the day-to-day implementation activities (e.g. signing in students and randomly surveying sessions) and will also supervise our graduate assistant with data entry.

We will hire a Master's or Doctoral-level student from Tuskegee University. He or she will be responsible for (1) data entry; (2) formulation of in-depth interview questions for 30 parents; (3) budget management; and (4) data analysis and manuscript preparation. Once questions for the in-depth interviews have been created, they will be edited and approved by the project coordinators. To protect the confidentiality of the students, the graduate assistant will assign each student a random 10-digit identifier.

In addition to the principal investigator, project coordinators, and graduate research assistant, there is additional staffing required to ensure Smart Moves/Bright Bodies is a successful program. Maxwell Bronson, a county agent for Wilcox/Lowndes through TUCEP, will lead the nutrition education portion of the program. He is only required to teach one 40-minute session bi-monthly. Mr. Bronson has agreed to film his nutrition sessions so that parents will be able to view them on YouTube. Wanda Burton, Justin Kennedy, and Jerome Carter, are PE teachers employed by the county public schools, and will facilitate the physical activity sessions of the program. Due to multiple weekly physical activity sessions, we felt it necessary to hire a PE teacher that would work with students from his or her school. Sessions are held for 50 minutes, twice a week, with a warm-up, high-intensity exercise, and a cool-down exercise. Danitra Robinson, Lisa Wilson, and Howard Sullivan are Family Resource Counselors (FRC) and have agreed to conduct the behavior modification sessions with both students and parents. One FRC will be assigned to one school. Student and parental sessions are alternated once a week for 40 minutes. Students will be exposed to goal-setting techniques, coping strategies, and self-awareness. Parental sessions will focus on the parents' role in encouraging health lifestyle behaviors among their children. Students suffering from severe depression and anxiety will be referred to the Cahaba Center for Mental Health for additional treatment by the FRC.

There will be several trainings held throughout the three-year grant period to ensure the adaptation of the program maintains the integrity of the original study. All staff with the exception of the graduate assistant will be required to attend the Smart Moves/Bright Bodies training offered by the Yale Center for Clinical Investigating and Pediatric Endocrinology. Regional trainings will be held at the Alabama Department of Health in Montgomery, Alabama and only the two project coordinators and graduate assistant are required to attend.

V. Capacity of the Applicant Organization

ADPH serves to “promote, protect, and improve the health of individuals and communities in Alabama”. We are an equal opportunity employer; we do not discriminate on the basis of race/ethnicity, country of origin, gender, sexual orientation, gender identity, religious affiliation, or disability. As we do not discriminate against those employed by ADPH, we do not discriminate against our citizens regarding the availability of services. For more information regarding our organizational structure, see **Appendix F**. Regardless of socioeconomic status, we believe in providing quality and accessible services to all Alabamians. For over 130 years, ADPH has taken the lead in utilizing evidence-based programming to tackle the state-wide obesity epidemic. We have utilized numerous partnerships and have brought together diverse stakeholders through meetings and assessments. Our health department has produced a number of successful initiatives targeting all age groups from childhood obesity and adults across the state.

The Women, Infants, and Children (WIC) program is a federal assistance program for pregnant, breastfeeding, or postpartum women and children from ages 0-5. Eligible participants must be at or below 185% of the federal poverty level. The program includes financial assistance to purchase nutritious foods at a variety of vendors as well as nutrition education. To maintain

good health for all children, the ALL Kids program provides low-cost healthcare coverage for all kids living in Alabama until they are 19. Coverage is provided by Blue Cross Blue Shield of Alabama and includes immunizations, doctor visits, mental health and substance abuse services, vision and dental care, and more.

As one of the original implementation sites for the National Institutes of Health We Can! (Ways to Enhance Children's Activity & Nutrition) program, ADPH works to reduce obesity among youth ages 8-13 through proper nutrition, physical activity, and reduced screen time. Alabama Action for Healthy Kids is the state installment of the Action for Healthy Kids program which is the nation's largest nonprofit and volunteer organization designed to promote healthy living through diet and exercise. 27 of our schools were awarded grants to expand their school breakfast programs to provide alternate programs or free breakfast during the 2015-2016 school year. For the 2016-2017 school year, 33 schools received grants to support nutrition and physical activity initiatives that would lead to schools being recognized as health-promoting. There are several programs that also promote physical activity with youth and adults.

One such program, Get Moving Alabama, is co-sponsored by the Alabama Obesity Task Force to encourage Alabamians to increase their daily physical activity intake. There is a different theme released each month, for example, October's theme was "Get Moving at Your Tailgate". Flyers are created specific to each month's theme and are also age-specific, targeting both youth and adults. However, one of our most successful programs at combatting childhood and adulthood obesity is Scale Back Alabama.

Created in 2007, Scale Back Alabama has helped Alabamians lose over one million pounds by exercising and eating a healthier diet. The program has been turned into a 10-week competition with teams of two beginning in January each year and ending in April. Scale Back

Alabama is co-sponsored by the Alabama Hospital Association and Blue Cross Blue Shield of Alabama. While the program is primarily geared toward adults, Scale Back Alabama is now being implemented in schools to help school staff be healthy and be a role-model to their students. Outside of obesity programs, ADPH has the capacity to work specifically with adolescent students through the Alabama Pregnancy Prevention Branch (APPB).

Through the APPB, the Alabama Campaign to Prevent Teen Pregnancy non-profit organization was created. The campaign is determined to reduce teen pregnancy and STI rates among Alabama adolescents by providing resources for youth-serving professionals, adolescents, and parents. Various organizations have partnered with the campaign such as AIDS Alabama, the Alabama Department of Human Resources, and Alabama Alliance for Healthy Youth; these partners are responsible for community engagement, providing financial resources, and highlighting community interventions that have reduced teen pregnancy rates. Based on previous interventions for obesity and adolescent teen pregnancy, ADPH is equipped to provide adequate resources for an obesity intervention targeted toward teenagers.

VI. Partnerships & Collaboration

Unlike the clinical setting of the Yale Obesity Clinic with ethnically diverse participants, Smart Moves/Bright Bodies will be implemented in predominately African-American counties in a school setting. Therefore, a variety of partners and collaborators will be needed to ensure successful implementation. The main partners for this program are the American Diabetes Association, Dean of the College of Agriculture, Environment and Natural Sciences at Tuskegee University, Big Brothers Big Sisters/YMCA, the local healthcare system, and food manufacturers. Collaborators for this program include Wilcox and Lowndes County Public

School Systems (which include teachers and principals) and Tuskegee University Cooperative Extension Program (TUCEP).

Since its inception in 1940, the American Diabetes Association has been committed to combatting the deadly effects of diabetes through research, education, and community programs (http://www.diabetes.org/about-us/?loc=util-header_aboutus). The Alabama branch, located in Birmingham, hosts several diabetes awareness events in the area and is sponsored by local TV affiliate of CBS. Big Brothers Big Sisters and the YMCA are two organizations that provide children the opportunity to be their absolute best and reach their full potential. We, as ADPH, understand that BMI maintenance can be lost during the summer months; to ensure that this doesn't happen, Big Brothers Big Sisters and the YMCA have agreed to provide summer vouchers to participants for to access indoor and outdoor facilities and community programs. Other partners include Dr. William Barnes, Dean of the College of Agriculture, Environment and Natural Sciences at Tuskegee University, and grocery stores.

In the event of a serious medical emergency, all participants and their families will be referred to Dr. Willie White, an African-American physician affiliated with J Paul Jones Hospital. He has 31 years of experience and specializes in Family Medicine, although he does have expertise in weight loss, surgical and non-surgical. In addition to partnering with J Paul Jones Hospital, Cahaba Center for Mental Health has agreed to provide mental health services to participants with severe anxiety and/or depression. Located in Camden, Alabama, the Cahaba Center specializes in helping individuals recover from mental illnesses via several therapy mechanisms (e.g. CBT, trauma therapy, life skills, nutrition therapy). Facilities cater to all ages: adults, young adults, children and adolescents.

Since our three target high schools are implementation sites, we will be working closely with the principals and educators hired by Wilcox and Lowndes County Public Schools. From initial recruitment to implementation, principals are an integral communication channel between ADPH and participants. We have worked extensively with principals to identify eligible participants for the program; however, principals will initiate conversation about the program on our behalf. Our nutrition goals for the program are closely aligned with the Child Nutrition Program implemented by both school systems; the Child Nutrition Program ensures that all students have access to a nutritious breakfast, regardless of socioeconomic status. Lowndes County Public Schools also participated in the 2016 Scale Back Alabama Schools initiative. The cafeteria and food preparation station will be utilized during nutrition education sessions to demonstrate how to properly prepare nutritious foods. Educators are also a critical piece to ensure a successful implementation of the program in our schools. We will be recruiting PE teachers and guidance counselors to conduct physical activity and behavioral modification sessions, respectively.

Tuskegee University is a renowned historically-black university and has implemented several nutrition and obesity-prevention programs in Wilcox and Lowndes County. For over 110 years, TUCEP has “provided comprehensive research-based educational programs designed for life-long learning to assist limited resource families, both urban and rural and other groups and organizations, to improve their quality of life in a technological global society”⁸. TUCEP has created numerous programs such as “New Leaf Healthy Choices for Living” and the “Expanded Summer Health and Fitness Academy” to reduce childhood obesity and promote healthy nutrition and physical activity. The nutrition specialist liaison for Lowndes-Wilcox will be the extension agent to lead the nutrition education.

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Appendix A: Logic Model for Smart Moves/Bright Bodies

INPUTS	OUTPUTS (ACTIVITIES)	OUTPUTS (PARTICIPATION)	OUTCOMES (SHORT-TERM)	OUTCOMES (INTERMEDIATE)	OUTCOMES (LONG-TERM)
<ul style="list-style-type: none"> • School Administrators • Faculty/Staff (PE Teachers, Guidance Counselors) • Graduate Assistant • Tuskegee University Cooperative Extension Program (TUCEP) • Parents • Smart Moves/Bright Bodies Materials • CBT on-line training 	<ul style="list-style-type: none"> • Afterschool (nutrition sessions, physical activity sessions and behavioral modification sessions) • Monthly CAG meetings • Data collection and analysis year-round (graduate assistant) • Progress Reports (end of fall semester) 	<ul style="list-style-type: none"> • Ninth- and Tenth-grade African-American teenagers, residing in Wilcox and Lowndes Counties, Alabama • Parents • Tuskegee University • J Paul Jones Hospital • Cahaba Center for Mental Health Focus • YMCA 	<ul style="list-style-type: none"> • Increase knowledge of healthy lifestyle behaviors (importance of proper diet and exercise) • Increase physical activity outside of sessions • Increase parents' knowledge of tribulations faced by their children (safety, etc.) • Reinforcement of physical activity sessions through summer vouchers 	<ul style="list-style-type: none"> • Increase physical activity (regular exercise) • Improvement in cholesterol, blood pressure, and triglyceride levels; reduction in BMI, body fat, and insulin resistance 	<ul style="list-style-type: none"> • 1% reduction in obesity over a 5-year span for African-American teenagers in Wilcox and Lowndes Counties, Alabama

Appendix B. Gantt Chart for Smart Moves/Bright Bodies Program

Three Year Action Plan for Smart Moves/Bright Bodies Program in Wilcox and Lowndes Counties, Alabama

5/1/2017-4/30/2020

Grantee Name: Alabama Department of Public Health

Funds Requested: \$750,000

	Year 1 (2017-2018)			Year 2 (2018-2019)			Year 3 (2019-2020)		
	May 1 - Jul 31	Aug 1 - Dec 31	Jan 1 - Apr 30	May 1 - Jul 31	Aug 1 - Dec 31	Jan 1 - Apr 30	May 1 - Jul 31	Aug 1 - Dec 31	Jan 1 - Apr 30
Purchase all Smart Moves/Bright Bodies Materials for implementation.	X								
Pay Annual Customer Service Fee.	X			X			X		
Review all Smart Moves/Bright Bodies materials for cultural appropriateness among African-American teenagers. Make changes wherever needed.	X			X			X		
Create a Community Advisory Group (students, parents, school superintendent, TUCEP). These persons were identified by members in the community as well-respected in the community.	X								
School principals will identify all students with a BMI ≥ 25 and notify parents of the study; consent forms	X			X			X		

will be sent home with the official letter.									
Hire Graduate Assistant and begin data collection training (e.g. in-depth interviews, analysis of data).	X								
Develop a Sustainability Plan for Smart Moves/Bright Bodies program.	X			X			X		
Staff training for Smart Moves/Bright Bodies program in New Haven, CT.	X								
Disseminate the project's initiatives and goals to the CAG as well as parents, teachers, and school administrators.	X			X			X		
Eligible parents and students have submitted their paperwork. Correspondence will be maintained through the summer to address any concerns regarding the program.	X			X			X		
Implement Smart Moves/Bright Bodies in three public high schools in Wilcox and Lowndes counties.	X			X			X		
Collect baseline data (cholesterol, triglyceride levels, BP, BMI, body fat, surveys on nutritional knowledge)	X			X			X		
Conduct random checks of facilitators during Smart Moves/Bright Bodies sessions to monitor teacher fidelity.		X	X		X	X		X	X
Collect midpoint data at conclusion of fall semester.			X	X	X	X	X	X	X
End-of-the-Semester review of program implementation to discuss fidelity and changes to be made to program.				X	X	X	X	X	X

*Fall semester changes will be implemented in spring semester.									
Collect final data at conclusion of spring semester.		X				X			X
Meetings with administrators will occur at the end of each school year during program.		X		X		X	X		X
OUTCOME EVALUATION (analysis of program's effectiveness—to also be done at the conclusion of Year 3). *Demographic information categorized into a database.			X	X			X		
Prepare a manuscript to publish in the Journal of Childhood Obesity, discussing our results over a three-year period. During this time, we will also submit an abstract for poster presentation.			X		X			X	

Appendix C. Smart Moves/Bright Bodies Budget

Dates: May 1, 2017 – April 30, 2020

Grand Total: \$726,291

	Year 1	Year 2	Year 3
A. Salary & Wages	\$108,724	\$115,302	\$125,473
B. Fringe	\$58,012	\$60,463	\$63,714
C. Consultant Costs	\$9000	\$9000	\$9000
D. Equipment	\$3750	\$0	\$0
E. Supplies	\$9989	\$6849	\$6832
F. Travel	\$7572	\$1278	\$1278
G. Incentives	\$3002	\$3002	\$3002
H. Contractual Costs	\$40,010	\$39,179	\$41,860
<i>Total</i>	\$240,059	\$235,073	\$251,159

Appendix D. Budget Justification for Smart Moves/Bright Bodies

I. Personal Salaries and Wages

Sarah Middleton, Principal Investigator	10%
Marcus Allen, Project Coordinator	50%
Danielle Jackson, Project Coordinator	50%
Danitra Robinson, Family Resource Counselor	30%
Lisa Wilson, Family Resource Counselor	30%
Howard Sullivan, Family Resource Counselor	30%
Justin Kennedy, PE Teacher	20%
Wanda Burton, PE Teacher	20%
Jerome Carter, PE Teacher	20%
Maxwell Bronson, Extension Agent	15%
Graduate Research Assistant	60%

Sarah Middleton, MPH, (10% / 1.2 calendar months) will serve as the Principal Investigator (PI) of Smart Moves/Bright Bodies. She serves as the Supervisor for Field Operations in ADPH which encompass local health services (i.e. public health areas, county health departments), clinical management and practice, and community affairs. She is a member of the American Diabetes Association and was integral in the creation of Healthy Eating Active Living (HEAL) Alabama, an organization dedicated to improving children's health through education, physical activity, and meal planning. A native of Alabama, Ms. Middleton received her Bachelor of Science degree in Food and Nutrition from the University of Alabama-Tuscaloosa and then received her Master of Public Health degree in Health Behavior from the University of Alabama-Birmingham.

Ms. Middleton's research focuses on childhood obesity prevention and health inequities. She has earned the trust and respect of Alabama citizens for her dedication to eliminating racial disparities and the reduction of childhood obesity through her implementation of successful evidence-based programs. Ms. Middleton has trained several graduate students and has a plethora of experience leading successful interventions, conducting qualitative and quantitative research, disseminating results, and working within the community lends to her credibility. Primarily with this project, Ms. Middleton will work closely with our graduate assistant to ensure data collection is done correctly and with integrity. She will also work closely with the project coordinators, Danielle Jackson and Marcus Allen, to oversee the spending of monetary funds and create the community advisory group. As a scholar, she will oversee all evaluation activities and will report directly to the funders by providing progress reports after each year of implementation.

Marcus Allen, BPH, (50% / 6.0 calendar months) will serve as one of the Project Coordinator of Smart Moves/Bright Bodies. Mr. Allen is a 2014 graduate of the UAB School of Public Health where he received his BPH in Health Behavior. Mr. Allen interned at ADPH for Ms. Middleton; his duties included analyzing secondary data, overseeing evaluation activities, and coordinating meetings with local health departments and schools. He also conducted research concerning social determinants of health for obesity among African-American and Latino adolescents. Due

to his research and internship experience, Mr. Allen has all of the necessary qualifications to serve as a Project Coordinator for this project. His primary duties will include: (1) maintaining contact with all three target schools; (2) ordering the required supplies for the program; (3) conducting interviews for the graduate assistant position alongside Ms. Middleton; (4) managing the budget and providing midpoint progress reports to Ms. Middleton; (5) organizing a community advisory group; (6) assisting with all IRB-protocol activities; and (7) following up with participants that fail to attend three consecutive weeks' worth of sessions.

Danielle Jackson, BPH, (50% / 6.0 calendar months) has been hired to serve as the second Project Coordinator. Ms. Jackson received her BPH degree in Community Health Education from The Ohio State University in 2013. She recently moved to Montgomery in 2015 where she was hired as a community health educator for ADPH, working with WIC and SNAP recipients. Her duties are identical to Mr. Allen's.

Wanda Burton (20% / 2.4 calendar months) will conduct the physical activity sessions at Wilcox Central High School, the only high school in Wilcox County. She serves as the PE teacher at Wilcox Central and as the Head Coach of the Wilcox Central High School girls' basketball team.

Justin Kennedy (20% / 2.4 calendar months) will conduct the physical activity sessions at Calhoun High School in Lowndes County, where he is employed as the PE teacher.

Jerome Carter (20% / 2.4 calendar months) will conduct the physical activity sessions at Central High School in Lowndes County, where he is employed as the PE teacher.

Maxwell Bronson, Extension Agent (15% / 1.8 calendar months) will work with the Smart Moves/Bright Bodies program. He is one of the Wilcox/Lowndes county agents through the Tuskegee University Cooperative Extension Program (TUCEP). Mr. Bronson will work specifically with the nutrition education component with a weekly 40-minute session. Each session will emphasize eating low-fat yet nutrient-dense foods with moderate size portion; for a special session, "Recipes Dear to the Heart", students will bring family recipes and work together as a team to make them healthier, yet flavorful dishes.

Danitra Robinson, MA (30% / 3.6 calendar months) is a family resource counselor at Baptist Family Resource in Montgomery, Alabama. A native of Alabama, she received her Master of Arts degree in Counseling from Northwestern University. She will conduct behavioral modification sessions for both students and their parents at Central High School, her alma mater. Each session will include various techniques such as self-awareness, goal setting, coping skills training aligned with topics utilized in a book created by the program, specifically for overweight children. Parental sessions will focus on the parents' role in encouraging health promotion behaviors.

Lisa Wilson, MEd (30% / 3.6 calendar months) is a family resource counselor with Family Guidance Center, Inc. serving Lowndes County, Alabama. A native of Alabama, she received her Master of Education degree in Counseling from the University of Tennessee-Chattanooga.

She will conduct behavioral modification sessions for both students and their parents at Calhoun High School, her alma mater.

Howard Sullivan, MEd (30% / 3.6 calendar months) is also a family resource counselor with Baptist Resource Center. A native of Alabama, he received his Master of Education degree in Professional Counseling from the University of Georgia. He will conduct behavioral modification sessions for both students and their parents at Wilcox Central High School, his alma mater.

Graduate Research Assistant (Tuskegee University) (60% / 7.2 calendar months) will be Master's or Doctoral-level students at Tuskegee University. Tuskegee is a historically black college or university (HBCU) that has produced quality researchers and leaders in the community. The research assistant will report directly to the Project Coordinators monthly for 5 hours. He or she is responsible for the following tasks: (1) data entry; (2) formulation of in-depth interview questions for 30 parents; (3) budget management; (4) data analysis and manuscript preparation.

II. Fringe Benefits

Fringe benefits are provided to all members of the study; calculations based on fringe benefits are provided through the Alabama Department of Public Health and Tuskegee University.

Benefit	Faculty	Staff	Post Doc	Graduate/ Undergraduate Students
Retirement	10%	10%	N/A	N/A
Social Security	7.65%	7.65%	7.65%	7.65%
Other Fringe	3.6%	3.9%	1.2%	1.2%
Total Percent	21.25%	21.55%	8.85%	8.85%
PLUS A Prorated Amount of Health and Life Insurance Multi-year projects should project a 3% increase in insurance per year. Amounts shown below are for the '16-'17 year. Estimated Student Health costs for future years are provided in link below.				
Employee	\$495/mo \$5,940/yr	\$495/mo \$5,940/yr	\$495/mo \$5,940/yr	\$2,500/year (estimated)
Employee + Children	\$649/mo \$7,788/yr	\$649/mo \$7,788/yr	\$649/mo \$7,788/yr	N/A
Employee + Spouse	\$783/mo \$9,396/yr	\$783/mo \$9,396/yr	\$783/mo \$9,396/yr	N/A
Employee + Family	\$922/mo \$11,064/yr	\$922/mo \$11,064/yr	\$922/mo \$11,064/yr	N/A
Life Insurance				
Life Insurance	\$3/month	\$3/month	\$3/month	N/A

	Details	Details	Details	
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III. Supplies **TOTAL: \$27,420**

Weight Management Workbooks (QTY: 20 per package) + Instructor's Manual (2): **12 each x \$1255 = \$15,060.**

- These workbooks would be distributed to each student (20 x 12 = 240 students over three years) and would include instructor's manuals for the P.E. teachers. Workbooks are included as the "curriculum start-up package".

Equipment Costs: **\$3,650**

- This represents a one-time investment which includes a body fat analyzer, heart rate monitors, physical education equipment, and games.

Weight Management Program Start-Up Manual: **1 each x \$1295 = \$1,295.**

- Two start-up manuals would be provided for each teacher that is an instructor for the course. These manuals include electronic and downloadable material for newsletters, brochures, and provide information as to how to start the program.

Customer Support Service Annual Fee: **3 years x \$295 = \$885.**

- The annual service fee is required and since the program will be continued for 3 years, the fee has been calculated to reflect that duration. Customer support will provide up to two hours of telephone consultation and newsletter updates.

Smart Moves Exercise Curriculum: **1 each x \$795.**

- This curriculum will be utilized by the PE teachers in administering the physical activity portion of the program.

Beck Cognitive Behavioral Therapy Training: **\$350 x 3 guidance counselors = \$1050**

- An online training for the essentials of CBT is needed for the behavioral modification sessions that will be conducted by Mrs. Robinson.

Logitech HD Pro Webcam: **\$100**

- Webcam will be used to film both nutrition and behavior modification sessions. Subsequent videos will be placed on YouTube.

Food: **\$1500 x 3 years = \$4,500**

- A graduation ceremony and dinner will be held for all students and their parents (150).

Parchment Paper: **\$16.99 each x 5 = \$85**

- Parchment paper will be used to print out certificates to all students and parents (150).

IV. Travel **TOTAL: \$10,128**

Out-Of-State Travel:

- Training at the Yale Center for Clinical Investigating and Pediatric Endocrinology, Yale School of Medicine-New Haven, CT
 - Training Costs: \$1200 (includes PI & 2 project coordinators) + \$300 (5 additional staff) = **\$2700**
 - Airfare: \$386 x 7 staff = **\$2702**
 - Lodging: \$85 per night x 3 nights = \$255 x 4 rooms = **\$1020**
 - Staff will be split off by 2; therefore, 4 rooms are needed.
 - Ground Transportation: \$140
 - **TOTAL: \$6562**

In-State Travel:

- We are requesting travel funding for our graduate research assistant. From Tuskegee to Lowndes County, the distance traveled is 73.3 miles one-way and 146.6 roundtrip. We are asking that our graduate assistant come in once every month which is 146.6 miles x 4 months = 586.4 miles total. 586.4 total miles at \$0.56 federal mileage reimbursement rate = \$328.38. From Tuskegee to Wilcox County, the distance traveled is 114.4 miles one-way and 228.8 miles roundtrip. 228.8 miles x 4 months = 915.2 miles total. 915.2 total miles at \$0.56 federal mileage reimbursement rate = \$512.51. During the summer months (May-August), our assistant will travel to ADPH (Montgomery, AL). From Tuskegee to Montgomery, the distance traveled is 37.7 miles one-way and 75.4 miles roundtrip. 75.4 x 4 months = 301.6 miles total. 301.6 total miles at \$0.56 federal mileage reimbursement rate = \$168.90.
 - **TOTAL: \$1009.79 \cong \$1010**
- Regional Training (3 staff members: Project Coordinators & Graduate Assistant)- Alabama Department of Public Health (Montgomery, AL)
 - Registration: \$50 x 3 = \$150
 - Ground Transportation: \$118.40
 - **TOTAL: \$268.40 x 2 years = \$537**

V. Participant Incentives TOTAL: \$9006

Participants: **225 each x \$10 gift cards = \$2250**
 In-Depth Interviews: **30 each x \$30 gift cards = \$900**
 MacBook Air: **\$999 x 3 = \$2997**
 YMCA Family Pass: **\$953 x 3 = \$2859**

Indirect Costs

We negotiated a F&A rate of 20%; the indirect cost is computed based on direct costs.

Salary & Wages:	\$349,499
Fringe:	\$182,189
Supplies:	\$23,670
Equipment:	\$3,750
Consultant Costs:	\$27,000
Travel:	\$10,128
Incentives:	\$9,006
Indirect:	\$121,049

Grand Total: \$726,291

Appendix E. Mock Participant Schedule (Sample Weeks)

	Fall Semester: Intervention Phase					Spring Semester: Maintenance Phase		
	M	F	M	F	M	F	M	F
PA	X	X	X	X	X		X	
NE		X		X	X		X	
BM	X Students	X Parents	X Students	X Parents	X Students	X Parents	X Students	X Parents

ABBREVIATIONS:

PA = Physical Activity

NE = Nutrition Education

BM = Behavior
Modification

Appendix F. Alabama Department of Public Health Organizational Chart

